

  
1241214 - R8 SDMS

Third West Weekly Report  
Shepherd, Michael

to:

Joyce Ackerman, 'Craig Barnitz (cbarnitz@utah.gov)'

06/15/2012 10:37 AM

Hide Details

From: "Shepherd, Michael" <Michael.Shepherd@rockymountainpower.net>

To: Joyce Ackerman/R8/USEPA/US@EPA, "'Craig Barnitz (cbarnitz@utah.gov)'"  
<cbarnitz@utah.gov>

#### 7 Attachments



Weekly Report 06-04 to 06-08-12.pdf Third West Weekly Log 2012-23.pdf 237202-1.pdf 237300-1.pdf 237399-1.pdf



237530-1.pdf 237696-1.pdf

Joyce & Craig,

Attached are the reports for the week of June 4, 2012.

All air monitoring results came back negative, except for one chrysotile hit on Thursday, June 7, 2012.

Please let me know if you have any questions.

Thanks,

Mike Shepherd  
Project Manager  
Rocky Mountain Power - Major Projects  
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## 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

# HEALTH SAFETY MANAGER (HSM)

### DAILY CHECKLIST

DATE: 06/04/12

#### General

- NA Work area Health and Safety Inspection
- NA Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
- NA Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
- NA Site hazard and safety instruction for all first time employees, contractors or visitors
- NA Complete Employee Meeting Record Form B (where applicable)
- NA Document required Respirator Training completion with Form H
- NA Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
- NA Confirm return of waste material manifest documents for each load with site manager.
- NA Complete all CSHASP Forms (for applicable activities planned for that day)
  - NA Illness/Injury Report Form A
  - NA Site-Specific Training Record Form C
  - NA Hot Work Permit Form D
  - NA Trench/Evacuation Permit Form E
  - NA Combined Space Entry Permit Form F
- ☐ Exclusion zone operations are practiced as instructed.
- ☒ Decontamination unit is working properly.
  - Workers are using decontamination unit as instructed.
  - Workers use personal protective equipment properly.
- ☒ Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
  - Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
- ☒ Review sign-in/sign-out log throughout and at the end of the workday.
- ☒ Secure the site at the end of the workday

#### Sampling

- NA Soil Confirmation sampling for any newly excavated areas
- ☒ Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
- NA Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
- NA Digitally photograph each sample location and at any place field sampling personnel determined necessary

- ☒ Electronically file photo files into the on-site database
- ☒ Complete Field Documentation
  - ☒ Field Sample Data Sheets (FSDS)
  - ☒ Logbook
  - ☒ On-site computer database
- ☒ Label each sample media with a unique number
- ☒ Seal sample(s) in zip lock plastic bags
- ☒ Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
- ☒ Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
- ☒ Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
- ☒ Electronically file sample reports into on-site database



## 3<sup>rd</sup> West Substation Site Project Safety Audit

Project: 3<sup>rd</sup> West Sub Station

Date: 06/04/12

Location: 3<sup>rd</sup> West, 1<sup>st</sup> South, SLC

Job Number: \_\_\_\_\_

Survey Conducted By: Justin Kargis

Title: \_\_\_\_\_

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			



Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			x	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.	x			
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			x	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	x			
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a 1/2 fire resistance barrier.			x	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
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1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Comments:

Exclusion zone inactive today, however work was conducted in this area at throughout the day.

Disturbance of native material was minimized.

Newman placed yard rock around the 46 kV structure. They dug out the area for the a concrete porch on the south side of the switch gear. They also watered the pile in the afternoon before leaving for the day.

CVE line crew worked on ground grid around the 46 kV structure. The trenching for this uncovered some small amounts of native material that had been soaked before digging. This material was quickly covered once the grid was placed.

Weather was hot, sunny and dry with light afternoon breezes and temperatures in the high 90's.

# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

## HEALTH SAFETY MANAGER (HSM)

### DAILY CHECKLIST

DATE: 06/05/12

#### General

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- NA Review and if necessary update Activity Hazard Analyses (AHA)-based on planned site activities for the day
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- NA Complete Employee Meeting Record Form B (where applicable)
- NA Document required Respirator Training completion with Form H
- NA Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
- NA Confirm return of waste material manifest documents for each load with site manager.
- NA Complete all CSHASP Forms (for applicable activities planned for that day)
  - NA Illness/Injury Report Form A
  - NA Site-Specific Training Record Form C
  - NA Hot Work Permit Form D
  - NA Trench/Evacuation Permit Form E
  - NA Combined Space Entry Permit Form F
- ☒ Exclusion zone operations are practiced as instructed.
  - ☒ Decontamination unit is working properly.
  - Workers are using decontamination unit as instructed.
  - Workers use personal protective equipment properly.
- ☒ Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
  - Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
- ☒ Review sign-in/sign-out log throughout and at the end of the workday.
- ☒ Secure the site at the end of the workday

#### Sampling

- NA Soil Confirmation sampling for any newly excavated areas
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- NA Digitally photograph each sample location and at any place field sampling personnel determined necessary

- ☒ Electronically file photo files into the on-site database
- ☒ Complete Field Documentation
  - ☒ Field Sample Data Sheets (FSDS)
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- ☒ Label each sample media with a unique number
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## 3<sup>rd</sup> West Substation Site Project Safety Audit

**Project:** 3<sup>rd</sup> West Sub Station

**Date:** 06/05/12

**Location:** 3<sup>rd</sup> West, 1<sup>st</sup> South, SLC

**Job Number:** \_\_\_\_\_

**Survey Conducted By:** Justin Kargis

**Title:** \_\_\_\_\_

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1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
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1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.	x			
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1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
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**Comments:**

Exclusion zone inactive today, however work was conducted in this area at throughout the day.

Disturbance of native material was minimized.

Newman continued to place yard rock around the 46 kV structure and did some leveling work between the control building and switchgear. They watered the stockpile in the morning and afternoon.

CVE worked on ground grid around 46 kV structure.

Weather cooled in the afternoon with strong winds and overcast skies. Temperatures dropped to the high 50's.

# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

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1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Comments:

Exclusion zone inactive today, however work was conducted in this area at throughout the day.

Disturbance of native material was minimized.

Bi-weekly meeting discussed scheduling and environmental considerations in the coming weeks as the project winds down. An onsite environmental meeting was scheduled for Friday 6/8.

Newman continued placing yard rock. They graded between the new structure and decontamination unit and the area for the porch on the south side of the control building. They watered the stockpile in the afternoon.

CVE continued trenching for and placing ground grid around 46 kV structure.

Weather was cool, breezy and dry with afternoon temperatures around 70.

# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

## HEALTH SAFETY MANAGER (HSM)

### DAILY CHECKLIST

DATE: 06/07/12

#### General

##### NA Work area Health and Safety Inspection

- NA Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
- NA Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
- NA Site hazard and safety instruction for all first time employees, contractors or visitors
- NA Complete Employee Meeting Record Form B (where applicable)
- NA Document required Respirator Training completion with Form H
- NA Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
- NA Confirm return of waste material manifest documents for each load with site manager.
- NA Complete all CSHASP Forms (for applicable activities planned for that day)
  - NA Illness/Injury Report Form A
  - NA Site-Specific Training Record Form C
  - NA Hot Work Permit Form D
  - NA Trench/Evacuation Permit Form E
  - NA Combined Space Entry Permit Form F
- ☒ Exclusion zone operations are practiced as instructed.
  - ☒ Decontamination unit is working properly.
  - Workers are using decontamination unit as instructed.
  - Workers use personal protective equipment properly.
- ☒ Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
  - Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
- ☒ Review sign-in/sign-out log throughout and at the end of the workday.
- ☒ Secure the site at the end of the workday

#### Sampling

- NA Soil Confirmation sampling for any newly excavated areas
- ☒ Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
- NA Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
- NA Digitally photograph each sample location and at any place field sampling personnel determined necessary

- ☒ Electronically file photo files into the on-site database
- ☒ Complete Field Documentation
  - ☒ Field Sample Data Sheets (FSDS)
  - ☒ Logbook
  - ☒ On-site computer database
- ☒ Label each sample media with a unique number
- ☒ Seal sample(s) in zip lock plastic bags
- ☒ Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
- ☒ Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
- ☒ Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
- ☒ Electronically file sample reports into on-site database



## 3<sup>rd</sup> West Substation Site Project Safety Audit

**Project:** 3<sup>rd</sup> West Sub Station

**Date:** 06/07/12

**Location:** 3<sup>rd</sup> West, 1<sup>st</sup> South, SLC

**Job Number:** \_\_\_\_\_

**Survey Conducted By:** Justin Kargis

**Title:** \_\_\_\_\_

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			x	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.	x			
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			x	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	x			
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			



Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

**Comments:**

Exclusion zone active while excavations took place.

Newman washed out two truckloads of native material in the morning. They watered the stockpile and then excavated a trench for conduit in the EZ.

CVE excavated for and placed ground grid along the south boundary of the yard. This uncovered amounts of native material that were placed in a skid steer machine and deposited on the stock pile for removal. This work was done outside the EZ and after the soil had been soaked to eliminate creation of dust.

Weather was cool, dry and sunny with moderate afternoon winds and temperatures in the mid 70's.

# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

## HEALTH SAFETY MANAGER (HSM)

### DAILY CHECKLIST

DATE: 06/08/12

#### General

- NA Work area Health and Safety Inspection
- NA Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
- ☒ Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
- NA Site hazard and safety instruction for all first time employees, contractors or visitors
- NA Complete Employee Meeting Record Form B (where applicable)
- NA Document required Respirator Training completion with Form H
- NA Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
- NA Confirm return of waste material manifest documents for each load with site manager.
- NA Complete all CSHASP Forms (for applicable activities planned for that day)
  - NA Illness/Injury Report Form A
  - NA Site-Specific Training Record Form C
  - NA Hot Work Permit Form D
  - NA Trench/Evacuation Permit Form E
  - NA Combined Space Entry Permit Form F
- ☒ Exclusion zone operations are practiced as instructed.
- ☒ Decontamination unit is working properly.
- ☒ Workers are using decontamination unit as instructed.
- ☒ Workers use personal protective equipment properly.
- ☒ Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
- ☒ Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
- ☒ Review sign-in/sign-out log throughout and at the end of the workday.
- ☒ Secure the site at the end of the workday

#### Sampling

- NA Soil Confirmation sampling for any newly excavated areas
- ☒ Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
- NA Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
- NA Digitally photograph each sample location and at any place field sampling personnel determined necessary

- ☒ Electronically file photo files into the on-site database
- ☒ Complete Field Documentation
  - ☒ Field Sample Data Sheets (FSDS)
  - ☒ Logbook
  - ☒ On-site computer database
- ☒ Label each sample media with a unique number
- ☒ Seal sample(s) in zip lock plastic bags
- ☒ Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
- ☒ Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
- ☒ Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
- ☒ Electronically file sample reports into on-site database



## 3<sup>rd</sup> West Substation Site Project Safety Audit

**Project:** 3<sup>rd</sup> West Sub Station

**Date:** 06/08/12

**Location:** 3<sup>rd</sup> West, 1<sup>st</sup> South, SLC

**Job Number:** \_\_\_\_\_

**Survey Conducted By:** Justin Kargis

**Title:** \_\_\_\_\_

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			x	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.	x			
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			x	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	x			
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a 1/2 fire resistance barrier.			x	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Comments:

Exclusion zone active while excavations took place.

Newman washed out six truckloads of contaminated material from stockpile. They continued with excavation for and placement of conduit line to capacitor banks in the EZ.

An onsite meeting held with R&R, RMP, and CVE personnel was conducted at 10 am to determine environmental items such as eventual removal of exclusion zone, excavating into native material after decontamination unit is removed, and digging inside the UTA yard for ground grid. When EZ is removed, exposed native soil is to be kept soaked, covered, and capped as quickly as possible to eliminate release of dust. Follow up to this meeting will be conducted over the coming week.

Weather was warm, dry and sunny with light afternoon winds and temperatures in the mid 80's.



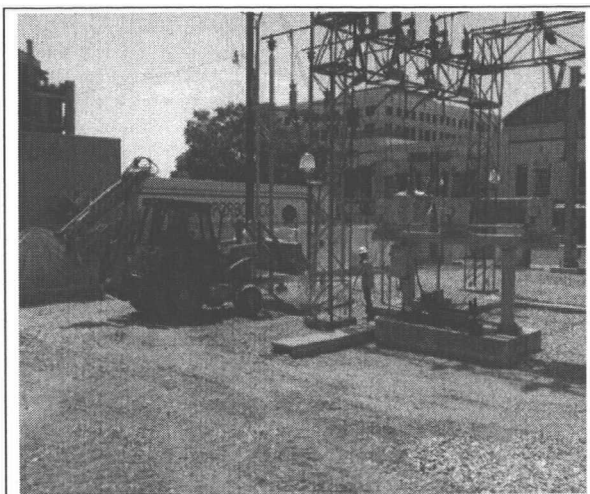


PHOTO 1

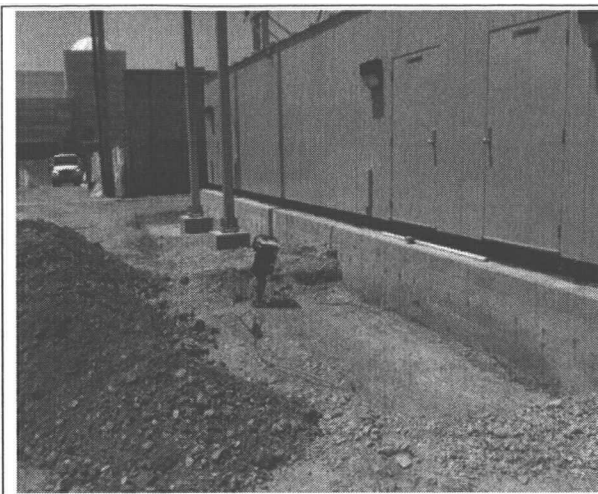


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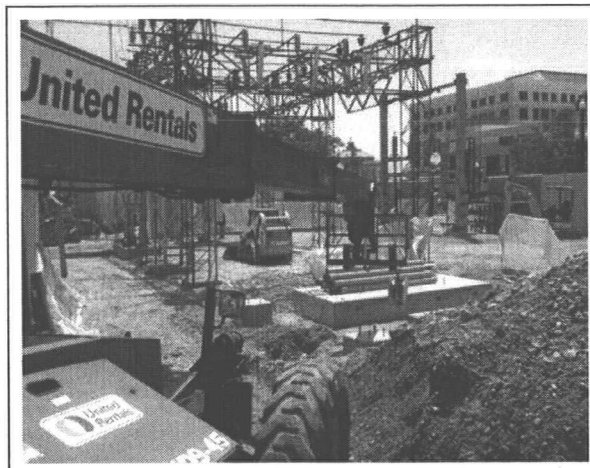


PHOTO 3

## **R & R**Environmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070  
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:

DCR

DRAWN BY:

JMK

DATE

06/04/12

FILE:

## SITE PHOTOGRAPHS



3<sup>rd</sup> West Substation  
"2011 Upgrade Project"  
Salt Lake City, Utah



PHOTO 1

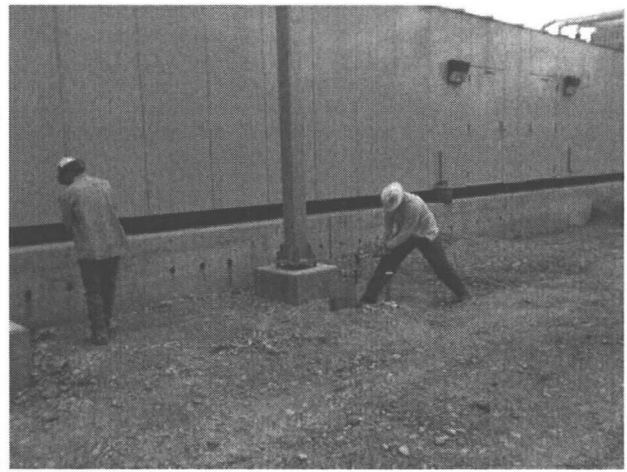


PHOTO 2



PHOTO 3

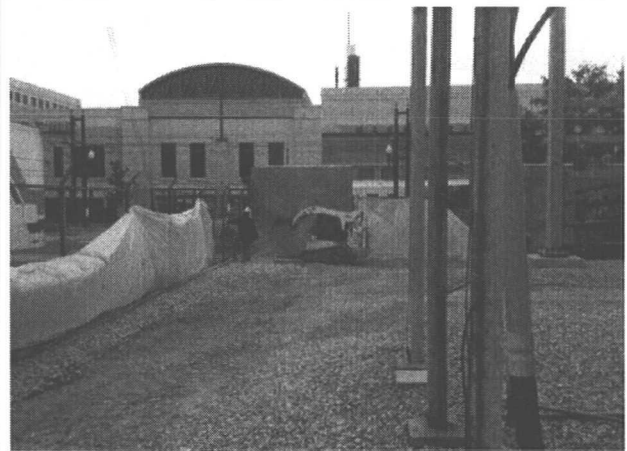


PHOTO 4

## **R & REnvironmental, Inc.**

47 West 9000 South, Suite #2, Sandy, Utah 84070  
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:  
DCR

DRAWN BY:  
JMK

DATE  
06/05/12

FILE:

## **SITE PHOTOGRAPHS**



**3<sup>rd</sup> West Substation  
"2011 Upgrade Project"  
Salt Lake City, Utah**

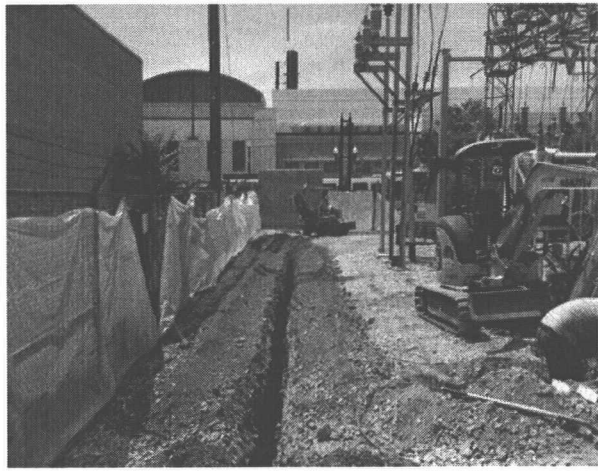


PHOTO 1



PHOTO 2

## **R & REnvironmental, Inc.**

47 West 9000 South, Suite #2, Sandy, Utah 84070  
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:  
DCR

DRAWN BY:  
JMK

DATE  
06/06/12

FILE:

## **SITE PHOTOGRAPHS**



**3<sup>rd</sup> West Substation  
"2011 Upgrade Project"  
Salt Lake City, Utah**

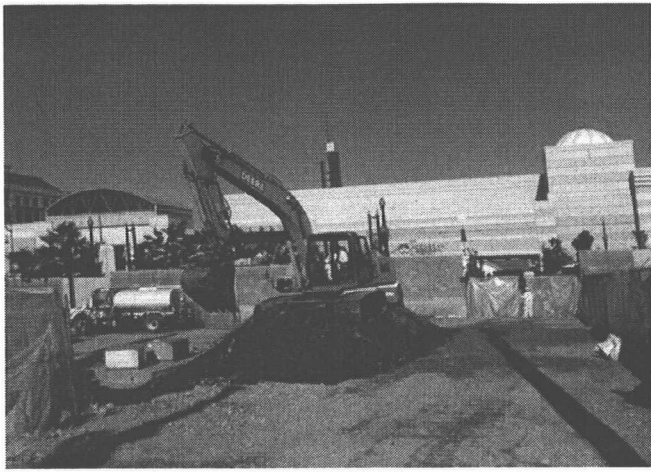


PHOTO 1



PHOTO 2



PHOTO 3

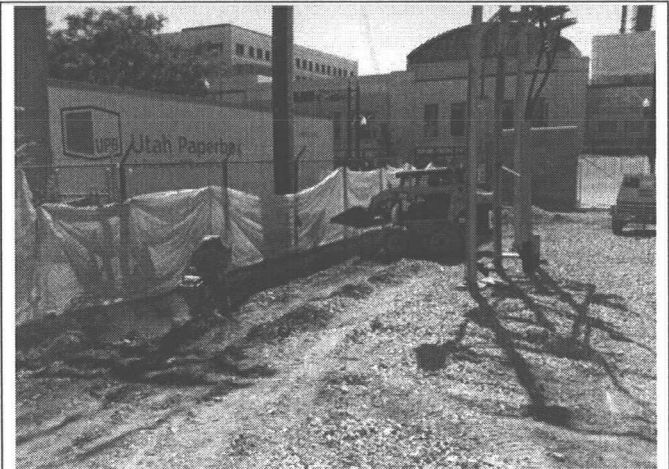


PHOTO 4

## **R & R**Environmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070  
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:  
DCR

DRAWN BY:  
JMK

DATE  
06/07/12

FILE:

## SITE PHOTOGRAPHS



3<sup>rd</sup> West Substation  
"2011 Upgrade Project"  
Salt Lake City, Utah



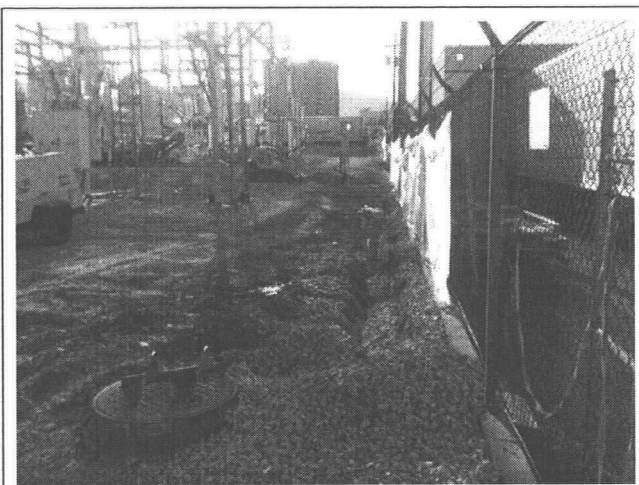


PHOTO 1



PHOTO 2

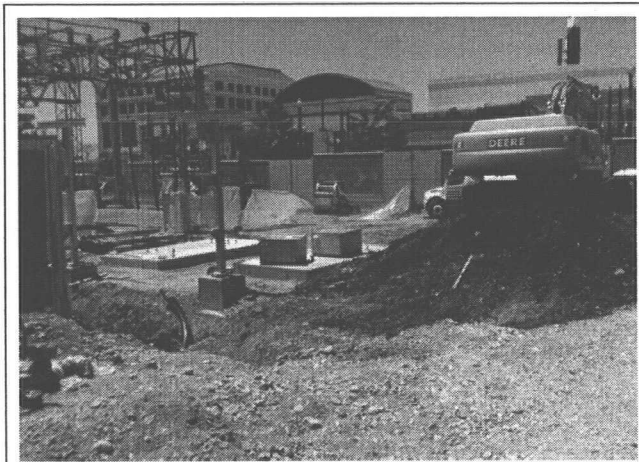


PHOTO 3

## **R & R**Environmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070  
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:

DCR

DRAWN BY:

JMK

DATE

06/08/12

FILE:

## SITE PHOTOGRAPHS



3<sup>rd</sup> West Substation  
"2011 Upgrade Project"  
Salt Lake City, Utah

# PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME: Third West Sub - Rebuild

DATE : Monday, June 4, 2011

PO & Work Order NO. : 3000078050 / 10035803

MAIN CONTRACTOR : Cache Valley Electric

Crew Start Time: 7:00

Crew Stop Time: 17:10 Tot Hrs mns: 10:10

FCR Start Time: 6:49

FCR Stop Time: 17:24 Tot Hrs mns: 10:35

Use military time format 00:00

WEATHER CONDITIONS: Sunny - 72 degrees In AM, 98 degrees in PM

DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)

R&R set up four monitors. CVE Line Crew installed grounding to the 46 kV structures, the new capacitor banks and jumpers to the 46 kV VTs. CVE Fab Crew not on site today. Newman installed yard rock under the 46 kV bus, excavated for the center porch of the switchgear, and exposed the #6 vault (cap bank vault) in preparation for digging duct bank from the vault to the get-a-way structures. Southwire left paperwork to have their tool boxes picked up and shipped. We are waiting for Southwire to perform a PD test, which is scheduled for this week. CVE Line Crew = 2, CVE Fab Crew = 0, CVE Electrical Crew = 0, Newman = 3, R&R = 1.

IF WORKING IN ENERGIZED SUBSTATION:

Dispatcher login, name and time:	Al Swinski 0649
Dispatcher logout, name and time:	Al Swinski 1724

DISCREPANCIES:

IMMEDIATE CORRECTIVE ACTION TAKEN:


DELAYS OR LOST TIME ENCOUNTERED:

--

EQUIPMENT (working, delivered, idle):

CVE Line Crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, Pickup, JLG (1), tool trailer. Newman: trachoe (1), bobcat, mini-ex, water truck, compactor, backhoe.

OSHA Recordable Safety Incidents:

Reported by:                      Time:             


**Rocky Mountain Power**

A division of PacifiCorp

Russ Johnson

Field Construction Representative

# PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME: Third West Sub - Rebuild

DATE : Tuesday, June 5, 2012

PO & Work Order NO. : 3000078050 / 10035803

MAIN CONTRACTOR : Cache Valley Electric

Crew Start Time: 6:55

Crew Stop Time: 17:05

Tot Hrs mns: 10:10

FCR Start Time: 6:45

FCR Stop Time: 17:24

Tot Hrs mns: 10:39

Use military time format 00:00

WEATHER CONDITIONS: Sunny - 70 degrees in AM, 52 degrees in PM

**DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)**

R&R set up four monitors. CVE Line Crew installed jumpers on the Jordan line and installed grounding along the west side of the N-S cable trench. CVE Fab Crew not on site today. Newman compacted the center porch area and started backfilling around the capacitor banks. They also graded the south roadway along the south side of the 46 kV yard and placed yard rock around the existing vault in the SW corner of the 46 kV yard. CVE Line Crew = 2, CVE Fab Crew = 0, CVE Electrical Crew = 0, Newman = 3, R&R = 1, Wilding = 1.

**IF WORKING IN ENERGIZED SUBSTATION:**

Dispatcher login, name and time: Al Swinski 0645

Dispatcher logout, name and time: Al Swinski 0524

DISCREPANCIES:	IMMEDIATE CORRECTIVE ACTION TAKEN:

**DELAYS OR LOST TIME ENCOUNTERED:**

--

**EQUIPMENT (working, delivered, idle):**

CVE Line Crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, Pickup, JLG (1), tool trailer. Newman: trachoe (1), bobcat, mini-ex, water truck, compactor, backhoe.

OSHA Recordable Safety Incidents:	Reported by:	Time:

**Rocky Mountain Power**

A division of PacifiCorp

Russ Johnson

Field Construction Representative

# PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME: Third West Sub - Rebuild

DATE : Wednesday, June 6, 2012

PO & Work Order NO. : 3000078050 / 10035803

MAIN CONTRACTOR : Cache Valley Electric

Crew Start Time: 6:55

Crew Stop Time: 17:15 Tot Hrs mns: 10:20

FCR Start Time: 6:41

FCR Stop Time: 17:25 Tot Hrs mns: 10:44

Use military time format 00:00

WEATHER CONDITIONS: Sunny - 50 degrees in AM, 63 degrees in PM

## DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)

R&R set up four monitors. CVE Line Crew installed grounding along the west side of the N-S cable trench and along south roadway, extending into the 46 kV yard. CVE Fab Crew not on site today. Newman compacted ABC material for the south porch slab of the control building, graded the area south of the control building, graded the area west of the N-S cable trench where CVE has been installing grounding, and watered down the waste pile. CVE Line Crew = 2, CVE Fab Crew = 0, CVE Electrical Crew = 0, Newman = 3, R&R = 1.

## IF WORKING IN ENERGIZED SUBSTATION:

Dispatcher login, name and time: Al Swinski 0641

Dispatcher logout, name and time: Bary Nielson 1725

## DISCREPANCIES:

## IMMEDIATE CORRECTIVE ACTION TAKEN:


## DELAYS OR LOST TIME ENCOUNTERED:

--

## EQUIPMENT (working, delivered, idle):

CVE Line Crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, Pickup, JLG (1), tool trailer. Newman: trachoe (1), bobcat, mini-ex, water truck, compactor, backhoe.

## OSHA Recordable Safety Incidents:

Reported by:

Time:


**Rocky Mountain Power**

A division of PacifiCorp

Russ Johnson

Field Construction Representative



# PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME: Third West Sub - Rebuild

DATE : Thursday, June 7, 2012

PO & Work Order NO. : 3000078050 / 10035803

MAIN CONTRACTOR : Cache Valley Electric

Crew Start Time: 6:55

Crew Stop Time:                      Tot Hrs mns: 17:05

FCR Start Time: 6:47

FCR Stop Time:                      Tot Hrs mns: 17:13

Use military time format 00:00

WEATHER CONDITIONS: Sunny - 50 degrees in AM, 73 degrees in PM

**DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)**

R&R set up four monitors. CVE Line Crew installed grounding along the south side of the 46 kV yard. They dug in a ground cable 2' off of the fence and installed ground rods only on the south run, so as not to hit the 12 kV duct bank that runs west to the existing vault. Tied new grounds to the grounds coming west under the geotech retaining wall. CVE Fab Crew not on site today. Newman loaded out two loads of material for delivery to Clean Harbors and excavated for the capacitor bank duct banks from vault #6. Newman encountered two duct banks during their excavation, one being the old 46 kV duct bank to the north UG structure, and the other appeared to be an old 4 kV duct bank that ran to the two vaults just inside the northwest gate. Received confirmation from RMP that we can pour a 6" slab for the porches on the control building and all ground rods can be installed on the ground run closest to the south fence line, so as not to hit the 12 kV duct bank. Received four tmck crossing lids from Proglass. Yesterday, loaded two Southwire tool boxes for shipment. Delivered HVB breaker timing equipment to Decade Sub per Beth Riding's instructions (contacted Gus Montanez and Al Swinski). CVE Line Crew = 2, CVE Fab Crew = 0, CVE Electrical Crew = 0, Newman = 3, R&R = 1, Wilding = 1.

**IF WORKING IN ENERGIZED SUBSTATION:**

Dispatcher login, name and time:	Bob Gentry 0647
Dispatcher logout, name and time:	

DISCREPANCIES:	IMMEDIATE CORRECTIVE ACTION TAKEN:

**DELAYS OR LOST TIME ENCOUNTERED:**

--

**EQUIPMENT (working, delivered, idle):**

CVE Line Crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex , exclusion zone conex (2), tool trailer. Pickup, JLG (1), tool trailer. Newman: trachoe (1), bobcat, mini-ex , water truck, compactor, backhoe.

OSHA Recordable Safety Incidents:	Reported by:	Time:

**Rocky Mountain Power**

A division of PacifiCorp

Russ Johnson

Field Construction Representative

# PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME: Third West Sub - Rebuild

DATE: Friday, June 8, 2012

PO & Work Order NO.: 3000078050 / 10035803

MAIN CONTRACTOR: Cache Valley Electric

Crew Start Time: 6:55

Crew Stop Time: 15:00

Tot Hrs mns: 8:05

FCR Start Time: 6:52

FCR Stop Time: 15:10

Tot Hrs mns: 8:18

Use military time format 00:00

WEATHER CONDITIONS: Sunny - 62 degrees in AM, 82 degrees in PM

**DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)**

R&R set up four monitors. CVE Line Crew (1 man - qualified observer) completed backfilling the grounding excavations along the south side of the 46 kV yard. CVE Fab Crew not on site today. Newman loaded out six loads of material for delivery to Clean Harbors and excavated for the capacitor bank duct banks from vault #6. CVE Line Crew = 1, CVE Fab Crew = 0, CVE Electrical Crew = 0, Newman = 3, R&R = 1, Wilding = 1.

**IF WORKING IN ENERGIZED SUBSTATION:**

Dispatcher login, name and time: Kim Batt 0652

Dispatcher logout name and time: Jim Bowman 1717

**DISCREPANCIES:**

**IMMEDIATE CORRECTIVE ACTION TAKEN:**


**DELAYS OR LOST TIME ENCOUNTERED:**

--

**EQUIPMENT (working, delivered, idle):**

CVE Line Crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, Pickup, JLG (1), tool trailer. Newman: trachoe (1), bobcat, mjni-ex, water truck, compactor, backhoe.

**OSHA Recordable Safety Incidents:**

Reported by:

Time:


**Rocky Mountain Power**

A division of PacifiCorp

Russ Johnson

Field Construction Representative



# **Reservoirs Environmental, Inc.**

June 6, 2012

Laboratory Code: RES  
Subcontract Number: NA  
Laboratory Report: RES 237202-1  
Project # / P.O. #: None Given  
Project Description: 3rd West Sub - RMP

Eldon Romney  
R & R Environmental  
47 West 9000 South #2  
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 237202-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer  
President

# RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE L TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 237202-1  
Client: R & R Environmental  
Client Project Number / P.O.: None Given  
Client Project Description: 3rd West Sub - RMP  
Date Samples Received: June 5, 2012  
Analysis Type: TEM, AHERA  
Turnaround: 24 Hour  
Date Samples Analyzed: June 6, 2012

Client ID Number	Lab ID Number	Area Analyzed (mm <sup>2</sup> )	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm <sup>2</sup> )
3W-060412 W	EM 884424	0.0900	929	ND	0.0046	BAS	BAS
3W-060412 N	EM 884425	0.0900	929	NO	0.0046	BAS	BAS
3W-060412 E	EM 884426	0.0900	927	ND	0.0046	BAS	BAS
3W-060412 S	EM 884427	0.0900	927	ND	0.0046	BAS	BAS

NA = Not Analyzed  
ND = None Detected  
BAS = Below Analytical Sensitivity  
Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester  
Filter Diameter = 25 mm  
Effective Filter Area = 385 sq mm

*ll*  
Digitally signed by  
Dante Liberman  
DN: cn=Dante  
Liberman, c=US  
o=Reservoirs  
Environmental  
Inc.  
Date: 2012.06.06  
16:45:00 -0500

DATA QA

Due Date: 6.6.12  
Due Time: 845a

RES 237202



5801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4276 • Toll Free: 866 RESI-ENV

Pager: 303-509-2098

Page 1 of 1

INVOICE TO: (IF DIFFERENT)

CONTACT INFORMATION:

Company: <u>REI Environmental</u>	Company:	Contact: <u>Dave Roskelley</u>	Contact:
Address: <u>117 W 9000S #2</u>	Address:	Phone:	Phone:
<u>Sandy LA 84043</u>		Fax:	Fax:
		Cell/pager: <u>801541-1035</u>	Cell/pager:
Project Number and/or P.O. #:	Final Date Deliverable Email Address: <u>dave@reuiro.com</u>		
Project Description/Location: <u>3rd West Sub - RAMP</u>			

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		REQUESTED ANALYSIS												VALID MATRIX CODES				LAB NOTES:	
PLM / PCM / TEM <u>TEM</u> RUSH (Same Day) <u>X</u> PRIORITY (Next Day) STANDARD (Rush PCM = 2hr, TEM = 6hr.)														Air = A	Bulk = B				
CHEMISTRY LABORATORY HOURS: Weekdays: 6am - 5pm														Dust = D	Paint = P				
Metal(s) / Duct RUSH 24 hr. 3-5 Day														Soil = S	Wipe = W				
RCRA 8 / Metals & Welding Fume Scan / TCLP RUSH 5 day 10 day														Swab = SW	F = Food				
Organics 24 hr. 3 day 5 Day														Drinking Water = DW	Waste Water = WW				
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm														O = Other					
E.coli O157:H7, Coliforms, S.aureus 24 hr. 2 Day 3-5 Day														**ASTM E1782 approved wipe media only**					
Salmonella, Listeria, E.coli, APC, Y & M 48 Hr. 3-5 Day														Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected h:mm a/p	EM Number (Laboratory Use Only)
Mold RUSH 24 Hr 48 Hr 3 Day 5 Day																			
**Turnaround times establish laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.**																			
Special Instructions:																			
Client sample ID number (Sample ID's must be unique)																			
1	<u>3W-060412 W</u>	X																	<u>88-424</u>
2	<u>3W-060412 N</u>																		<u>25</u>
3	<u>3W-060412 E</u>																		<u>26</u>
4	<u>3W-060412 S</u>																		<u>27</u>
5																			
6																			
7																			
8																			
9																			
10																			

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By sending client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: <u>Justin Kyrie</u>	Fed Ex	Date/Time: <u>6/6/12</u>	Sample Condition: On Ice Sealed Intact
Laboratory Use Only			Temp. (F°) Yes / No Yes / No Yes / No
Received By: <u>[Signature]</u>	Date/Time: <u>6/12/12</u>	Carrier: <u>FedEx</u>	
Results:	Contact Phone Email Fax Date Time Initials	Contact Phone Email Fax Date Time Initials	
	Contact Phone Email Fax Date Time Initials	Contact Phone Email Fax Date Time Initials	

Analysis # 7536 3618 2046  
7-2011 version 1

## Attachment I

Key to Count Sheets  
Count Sheets  
Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

### Asbestos Type

A = Amosite  
An = Anthophyllite  
C = Chrysotile  
Cr = Crocidolite  
T = Tremolite

### Structure Types

F = Fiber  
B = Bundle  
C = Cluster  
M = Matrix

ND = no structures detected  
M = other structure associated with a matrix  
NAM = Non Asbestos Mineral  
XGB = partly obscured by a grid bar

### Sizing Conversion

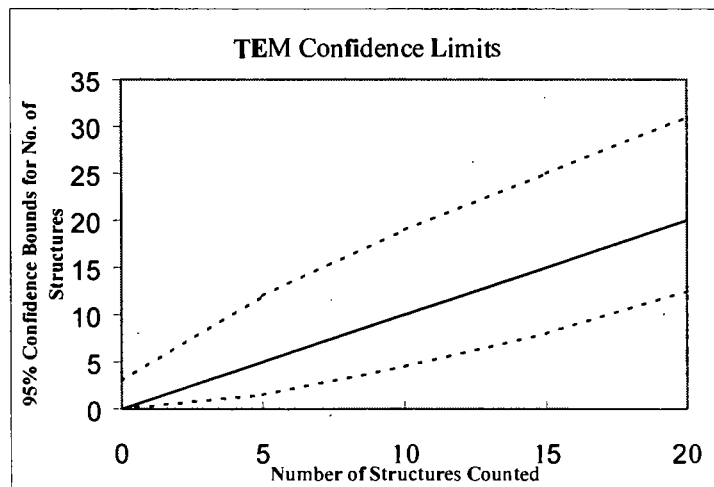
1 length unit = 5 mm on screen = 0.278 micron  
1.80 length units = 0.5 micron  
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

### TEM Analysts

Jeanne S. Orr  
Nathan DelHierro  
Angela Heitger  
Jonathan Bernard

Paul D. LoScalzo  
Mark Steiner  
Norberto Zimbleman  
Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX <del>N</del> S
Voltage (KV)	100 KV
Magnification	<del>20KX</del> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client:	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	929
Date received by lab	6/5/12
Lab Job Number:	237202
Lab Sample Number:	884424

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	6/6/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H4-3	ND												
	G4-3	ND												
	F4-3	ND												
	E4-3	ND												
	C4-3	ND												
B	G3-4	ND												
	F3-4	ND												
	E3-4	ND												
	C3-4	ND												

Preps A+B ~ 80% in tent 5% debris

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX <del>N</del> S
Voltage (KV)	100 KV
Magnification	<del>20KX</del> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	929
Date received by lab	6/5/12
Lab Job Number:	237202
Lab Sample Number:	884425

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	6/6/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	G3-4	ND												
	F3-4	ND												
	E3-4	ND												
	C3-4	ND												
	B3-4	ND												
B	H3-4	ND												
	G3-4	ND												
	F3-4	ND												
	E3-4	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material



Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX <del>N</del> S
Voltage (KV)	100 KV
Magnification	<del>20KX</del> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	927
Date received by lab	6/5/12
Lab Job Number:	237202
Lab Sample Number	884426

Analyzed by	JB
Analysis date	6/6/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H2-4	ND												
	G2-4	ND					Pup A	80%			about 5% debris			
	F2-4	ND					Pup B	80%			about 5% debris			
	E2-4	ND												
	C2-4	ND												
B	H3-1	ND												
	G3-1	ND												
	F3-1	ND												
	E3-1	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX <del>N</del> S
Voltage (KV)	100 KV
Magnification	<del>20KX</del> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Tyoe	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	927
Date received by lab	6/5/12
Lab Job Number	237202
Lab Sample Number:	884427

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	6/6/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H2-1	MD												
	G2-1	MD												
	F2-1	ND												
	E2-1	ND												
	C2-1	ND												
B	H3-6	MD												
	G3-6	MD												
	F3-6	ND												
	E3-6	ND												

Purps A+B ~ 80% asbestos 10-15% debris

/B 6/6/12

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

## Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm<sup>2</sup> (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm<sup>2</sup> (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

<b>Fiber:</b>	is a structure having a minimum length greater than or equal to 0.5 micron with an aspect ratio of 5:1 or greater with substantially parallel sides.
<b>Bundle:</b>	is a structure composed of three or more fibers in parallel arrangement, with each fiber closer than the diameter of one fiber.
<b>Cluster:</b>	is a structure with fibers in random arrangements such that all fibers are intermixed and no single fiber is isolated from the group.
<b>Matrix:</b>	is a fiber or fibers with one end free and the other end embedded or hidden by a particulate. The exposed fiber end must meet the fiber definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm<sup>2</sup> clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

### Equations Used for Calculations

$$\text{Area Analyzed, mm}^2 = \# \text{ GO counted} \times \text{Average GO Area (mm}^2\text{)}$$

$$\text{Concentration, s/cc} = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2\text{)}}{\text{Average GO area (mm}^2\text{)}} \times \frac{1\text{L}}{1000\text{cc}}$$

$$\text{Filter loading, s/mm}^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2\text{)}}$$

GO = TEM grid opening



# **Reservoirs Environmental, Inc.**

June 7, 2012

Laboratory Code: RES  
Subcontract Number: NA  
Laboratory Report: RES 237300-1  
Project # / P.O. #: None Given  
Project Description: 3rd West Sub-RMP

Eldon Romney  
R & R Environmental  
47 West 9000 South #2  
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 237300-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer  
President

# RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 237300-1  
Client: R & R Environmental  
Client Project Number / P.O.: None Given  
Client Project Description: 3rd West Sub-RMP  
Date Samples Received: June 6, 2012  
Analysis Type: TEM, AHERA  
Turnaround: 24 Hour  
Date Samples Analyzed: June 7, 2012

Client ID Number	Lab ID Number	Area Analyzed (mm <sup>2</sup> )	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm <sup>2</sup> )
3W-060512 W	EM 884654	0.1000	875	ND	0.0044	BAS	BAS
3W-060512 N	EM 884655	0.1000	875	ND	0.0044	BAS	BAS
3W-060512 E	EM 884656	0.1000	875	ND	0.0044	BAS	BAS
3W-060512 S	EM 884657	NA	871	NA	Sample rejected due to loose debris		

NA = Not Analyzed  
ND = None Detected  
BAS = Below Analytical Sensitivity  
Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester  
Filter Diameter = 25 mm  
Effective Filter Area = 385 sq mm

*ee*  
Digitally signed  
by Elene  
Esterman  
DN: cn = Elene  
Esterman, c =  
US, o =  
Reservoirs  
Environmental,  
Inc.  
Date: 2012.06.07  
10:35:00 -0800

DATA QA

Due Date: 6-7-12  
 Due Time: 8:00



# Reservoirs Environmental, Inc.

5901 Logan St. Denver, CO 80216 • Ph: 303 584-1986 • Fax 303-477-4275 • Toll Free: 866-RES-ENV

Pager: 505-509-2005

Page 1 of 1

## INVOICE TO: (IF DIFFERENT)

## CONTACT INFORMATION:

Company: <u>REILAB Environmental</u>	Company:	Contact: <u>Dave Roskelley</u>	Contact:
Address: <u>47 W 9000 S #2</u>	Address:	Phone:	Phone:
<u>Sandy, UT 84070</u>		Fax:	Fax:
		Cell/pager: <u>801 541-4035</u>	Cell/pager:
Project Number and/or P.O. #:		First Date Deliverable Email Address:	
Project Description/Location: <u>321 West Sub - RMP</u>		<u>dave@reilab.com</u>	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		REQUESTED ANALYSIS										VALID MATRIX CODES		LAB NOTES:
PLM / PCM <u>TEM</u> <u>RUSH</u> (Same Day) <u>X</u> PRIORITY (Next Day) <u>STANDARD</u> (Rush PCM = 2hr, TEM = 6hr.)		PLM - Short report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	Salmonella: +/- E.coli O157:H7: +/- Listeria: +/- Aerobic Plate Count: +/- or Quantification E.coli: +/- or Quantification Coliforms: +/- or Quantification S.aureus: +/- or Quantification Y & M: +/- or Quantification Mold: +/-, Identification, Quantification	SAMPLE'S INITIALS OR OTHER NOTES	Air = A	Bulk = B			
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm										Dust = D	Paint = P			
Metal(s) / Dust <u>RUSH</u> 24 hr. 3-5 Day										Soil = S	Wipe = W			
RCRA 8 / Metals & Welding <u>RUSH</u> 5 day 10 day										Swab = SW	F = Food			
Fume Scan / TCLP										Drinking Water = DW	Waste Water = WW			
Organics <u>24 hr. 3 day 5 Day</u>		O = Other												
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm		**ASTM E1792 approved wipe media only**												
E.coli O157:H7, Coliforms, S.aureus <u>24 hr. 2 Day 3-5 Day</u>		Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected m/d/y	Time Collected h/m/a/p	EM Number (Laboratory Use Only)							
Salmonella, Listeria, E.coli, APC, Y & M <u>48 Hr. 3-5 Day</u>														
Mold <u>RUSH 24 Hr 48 Hr 3 Day 5 Day</u>														
**Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.**														
Special Instructions:														
Client sample ID number (Sample ID's must be unique)														
1	3W-060512 W	X								875	A	6/05/12	884654	
2	3W-060512 N									875			55	
3	3W-060512 E									875			56	
4	3W-060512 S									371			57	
5														
6														
7														
8														
9														
10														

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: <u>Justin Kiger</u>	Fed Ex	Date/Time: <u>6/05/12</u>	Sample Condition:	On Ice	Sealed	Intact
Laboratory Use Only			Temp. (P°)	Yes/No	Yes/No	Yes/No
Received By: <u>[Signature]</u>	Date/Time: <u>6/05/12</u>	Carrier: <u>Fed Ex</u>				
Results:	Contact	Phone Email Fax	Date	Time	Initials	Contact
	Contact	Phone Email Fax	Date	Time	Initials	Contact

7-2011\_version 1

## Attachment I

### Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

A = Amosite  
An = Anthophyllite  
C = Chrysotile  
Cr = Crocidolite  
T = Tremolite

#### Structure Types

F = Fiber  
B = Bundle  
C = Cluster  
M = Matrix

ND = no structures detected  
M = other structure associated with a matrix  
NAM = Non Asbestos Mineral  
XGB = partly obscured by a grid bar

#### Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron

1.80 length units = 0.5 micron

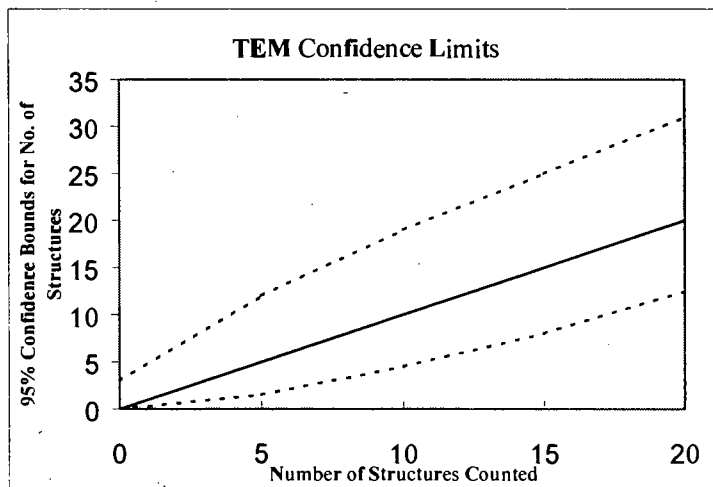
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### TEM Analysts

Jeanne S. Orr  
Nathan DelHiero  
Angela Heitger  
Jonathan Bernard

Paul D. LoScalzo  
Mark Steiner  
Norberto Zimbleman  
Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N (S)
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client:	RaR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	875
Date received by lab	6/6/12
Lab Job Number	237300
Lab Sample Number:	884654

Analyzed by	AH
Analysis date	6/7/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, ANERA, ASTM)	Alwara
Grid storage location	Montti Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	L5-3	ND												
	K5-3	ND												
	H5-3	ND												
	G5-3	ND												
	F4-3	ND												
B	H4-6	ND												
	G4-6	ND												
	F4-6	ND												
	E4-6	ND												
	C4-6	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material



Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N(S)
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client:	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	875
Date received by lab	6/6/12
Lab Job Number:	237300
Lab Sample Number:	884655

Analyzed by	AH
Analysis date	6/7/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EOS
A	H4-3	MD												
	G4-3	MD												
	F4-3	MD												
	E4-3	MD												
	C4-3	MD												
B	H5-1	MD												
	C5-1	MD												
	F5-1	MD												
	E5-1	MD												
	C5-1	MD												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	<del>20KX</del> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 $\mu$ m
Scale: 1D =	0.056 $\mu$ m
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client:	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	875
Date received by lab	6/6/12
Lab Job Number:	237300
Lab Sample Number:	884656

Analyzed by	
Analysis date	6/7/12
Method (D=Direct, I=Indirect, 1A=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H4-1	ND												
	G4-1	ND												
	F4-1	ND												
	E4-1	ND												
	C4-1	ND												
B	G4-4	ND												
	F4-4	ND												
	E4-4	ND												
	C4-4	ND												
	B4-4	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	200X 100X
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 $\mu$ m
Scale: 1D =	0.056 $\mu$ m
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client :	RAR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	875
Date received by lab	6/6/12
Lab Job Number:	237300
Lab Sample Number:	884657

**F-Factor Calculation (Indirect Preps Only):**

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	
Analysis date	6/7/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

[illegible]

**NAM = Non-asbestos material**

## Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm<sup>2</sup> (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm<sup>2</sup> (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

<b>Fiber:</b>	is a structure having a minimum length greater than or equal to 0.5 micron with an aspect ratio of 5:1 or greater with substantially parallel sides.
<b>Bundle:</b>	is a structure composed of three or more fibers in parallel arrangement, with each fiber closer than the diameter of one fiber.
<b>Cluster:</b>	is a structure with fibers in random arrangements such that all fibers are intermixed and no single fiber is isolated from the group.
<b>Matrix:</b>	is a fiber or fibers with one end free and the other end embedded or hidden by a particulate. The exposed fiber end must meet the fiber definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm<sup>2</sup> clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

### Equations Used for Calculations

$$\text{Area Analyzed, mm}^2 = \# \text{ GO counted} \times \text{Average GO Area (mm}^2\text{)}$$

$$\text{Concentration, s/cc} = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2\text{)}}{\text{Average GO area (mm}^2\text{)}} \times \frac{1\text{L}}{1000\text{cc}}$$

$$\text{Filter loading, s/mm}^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2\text{)}}$$

GO = TEM grid opening



June 8, 2012

Laboratory Code: RES  
Subcontract Number: NA  
Laboratory Report: RES 237399-1  
Project # / P.O. #: None Given  
Project Description: 3rd West Sub - RMP

David Roskelley  
R & R Environmental  
47 West 9000 South #2  
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 237399-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jeanne Spencer", is written over a horizontal line.

Jeanne Spencer  
President

# RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 237399-1  
Client: R & R Environmental  
Client Project Number / P.O.: None Given  
Client Project Description: 3rd West Sub - RMP  
Date Samples Received: June 7, 2012  
Analysis Type: TEM, AHERA  
Turnaround: 24 Hour  
Date Samples Analyzed: June 8, 2012

Client ID Number	Lab ID Number	Area Analyzed (mm <sup>2</sup> )	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm <sup>2</sup> )
3W-060612 W	EM 885207	0.0900	922	ND	0.0046	BAS	BAS
3W-060612 N	EM 885208	0.0900	922	NO	0.0046	BAS	BAS
3W-060612 E	EM 885209	0.0900	920	ND	0.0046	BAS	BAS
3W-060612 S	EM 885210	0.0900	920	1	0.0046	0.0046	11.1

NA = Not Analyzed  
ND = None Detected  
BAS = Below Analytical Sensitivity  
Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester  
Filter Diameter = 25 mm  
Effective Filter Area = 385 sq mm

Digitally signed  
by [Signature]  
DN: cn = [Signature]  
c = US, o =  
Reservoirs  
Environmental,  
Inc., ou = QA  
Date: 2012.06.08  
14:44:50 -0500

DATA QA

# RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number: RES 237399-1  
Client: R & R Environmental  
Client Project Number / P.O.: None Given  
Client Project Description: 3rd West Sub - RMP  
Date Samples Received: June 7, 2012  
Analysis Type: TEM, AHERA  
Turnaround: 24 Hour  
Date Samples Analyzed: June 8, 2012

Client ID Number	Lab ID Number	Asbestos Mineral	Asbestos Structure Types*				Structures >5 Microns in Length	**Excluded Structures	Asbestos Structures for Concentration
			Fibers	Bundles	Clusters	Matrices			
3W-060612 W	EM 885207	ND	0	0	0	0	0	0	0
3W-060612 N	EM 885208	ND	0	0	0	0	0	0	0
3W-060612 E	EM 885209	ND	0	0	0	0	0	0	0
3W-060612 S	EM 885210	Chrysotile	1	0	0	0	1	0	1

\*See Analytical Procedure for definitions

\*\*C = Excluded from total due to lack of confirmation

\*\*L = Excluded from total for length less than 0.5 micron (AHERA only)

\*\*A = Excluded from total due to incorrect aspect ratio

ND = None Detected

Due Time:                     

**INVOICE TO: (IF DIFFERENT)****CONTACT INFORMATION:**

Company: <b>RER Environmental</b>	Company: <b>INTEGRITY (A DIFFERENT)</b>	Contact: <b>Dave Koskelley</b>	Contact: <b>INTEGRITY</b>
Address: <b>47 W 9000S #2</b>	Address:	Phone:	Phone:
<b>Sandy, UT 84070</b>		Fax:	Fax:
		Cell/pegor: <b>801 541-1035</b>	Cell/pegor:
Project Number and/or P.O. #:		Final Date Deliverable Email Address:	
Project Description/Location: <b>3<sup>rd</sup> West Sub - RMD</b>			

[illegible]

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representatives agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.6% monthly interest surcharge.

Relinquished By: <u>Justin P. in</u> <u>FedEx</u> Date/Time: <u>6/06/12</u>										Sample Condition: _____ Temp. (F°) _____		On Ice Yes / No		Sealed Yes / No		Intact <u>Yes</u> / No	
Laboratory Use Only Received By: <u>[Signature]</u> Date/Time: <u>6-7-12</u> Carrier: <u>FedEx</u>																	
Results:	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials			
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials			

3531 3022 3425



## Attachment I

Key to Count Sheets  
Count Sheets  
Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

### Asbestos Type

A = Amosite  
An = Anthophyllite  
C = Chrysotile  
Cr = Crocidolite  
T = Tremolite

### Structure Types

F = Fiber  
B = Bundle  
C = Cluster  
M = Matrix

ND = no structures detected  
M = other structure associated with a matrix  
NAM = Non Asbestos Mineral  
XGB = partly obscured by a grid bar

### Sizing Conversion

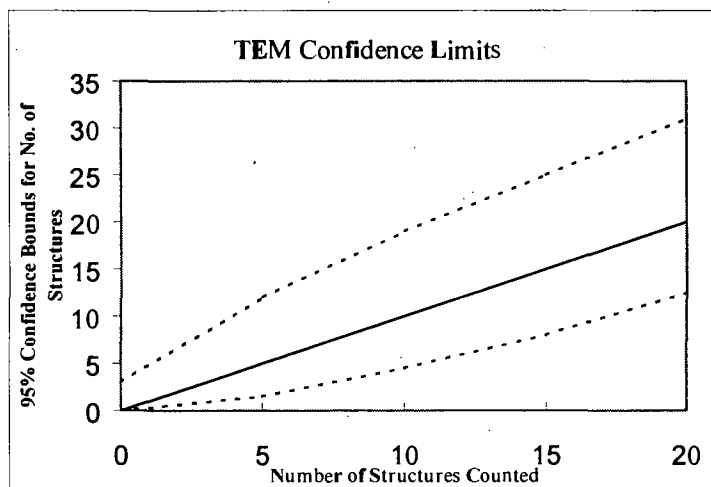
1 length unit = 5 mm on screen = 0.278 micron  
1.80 length units = 0.5 micron  
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

### TEM Analysts

Jeanne S. Orr  
Nathan DelHiero  
Angela Heitger  
Jonathan Bernard

Paul D. LoScalzo  
Mark Steiner  
Norberto Zimbleman  
Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Resenrols Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX <u>N</u> S
Voltage (KV)	100 KV
Magnification	<u>20KX</u> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	922
Date received by lab	6/7/12
Lab Job Number:	237399
Lab Sample Number:	885207

Analyzed by	JB
Analysis date	6/8/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K3-3	ND												
	H3-3	ND												
	G3-3	ND												
	F3-3	ND												
	E3-3	ND												
B	K3-1	ND												
	H3-1	ND												
	G3-1	ND												
	F3-1	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX <u>ND</u> S
Voltage (KV)	100 KV
Magnification	<u>20KX</u> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 $\mu$ m
Scale: 1D =	0.056 $\mu$ m
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	922
Date received by lab	6/7/12
Lab Job Number:	237399
Lab Sample Number	885208

Analyzed by	JB
Analysis date	6/8/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H3-1	MD												
	G3-1	MD												
	F3-1	MD												
	E3-1	MD												
	E4-4	MD												
B	H3-6	MD												
	G3-6	MD												
	F3-6	MD												
	E3-6	MD												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX <u>N</u> S
Voltage (KV)	100 KV
Magnification	<u>20KX</u> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client:	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	920
Date received by lab	6/9/12
Lab Job Number:	237399
Lab Sample Number:	885209

Analyzed by	JB
Analysis date	6/8/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary (liter used)	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H2-3	ND					Pmp A	80% in hnt		5% debris				
	G2-3	ND					Pmp B	60% in hnt		5% debris				
	F2-3	ND												
	E2-3	ND												
	E2-4	ND												
B	H4-4	ND												
	G4-4	ND												
	F4-4	ND												
	E4-4	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Page 1 of \_\_\_\_\_

Laboratory name:	REI
Instrument	JEOL 100 CX <u>NS</u>
Voltage (KV)	100 KV
Magnification	<u>20KX</u> 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	920
Date received by lab	6/7/12
Lab Job Number:	237399
Lab Sample Number:	885210

Analyzed by	JB
Analysis date	6/8/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H3-6	ND												
	G3-6	ND					Pmp A	70% unbrnt	5-7% debris					
	F3-6	ND					Pmp B	90% unbrnt	5-7% debris					
	E3-6	ND												
	C3-6	ND												
B	H3-6	F		1	18	1	CO		✓		JB			
	F3-6	ND												
	E3-6	ND												
	H3-6	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

## Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm<sup>2</sup> (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm<sup>2</sup> (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

<b>Fiber:</b>	is a structure having a minimum length greater than or equal to 0.5 micron with an aspect ratio of 5:1 or greater with substantially parallel sides.
<b>Bundle:</b>	is a structure composed of three or more fibers in parallel arrangement, with each fiber closer than the diameter of one fiber.
<b>Cluster:</b>	is a structure with fibers in random arrangements such that all fibers are intermixed and no single fiber is isolated from the group.
<b>Matrix:</b>	is a fiber or fibers with one end free and the other end embedded or hidden by a particulate. The exposed fiber end must meet the fiber definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm<sup>2</sup> clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

### Equations Used for Calculations

$$\text{Area Analyzed, mm}^2 = \# \text{ GO counted} \times \text{Average GO Area (mm)}$$

$$\text{Concentration, s/cc} = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2\text{)}}{\text{Average GO area (mm}^2\text{)}} \times \frac{\text{IL}}{1000\text{cc}}$$

$$\text{Filter loading, s/mm}^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2\text{)}}$$

GO = TEM grid opening



June 11, 2012

Laboratory Code: RES  
Subcontract Number: NA  
Laboratory Report: RES 237530-1  
Project # / P.O. #: None Given  
Project Description: 3rd West Sub - RMP

David Roskelley  
R & R Environmental  
47 West 9000 South #2  
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 237530-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jeanne Spencer", written in dark ink.

Jeanne Spencer  
President

# RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 237530-1  
Client: R & R Environmental  
Client Project Number / P.O.: None Given  
Client Project Description: 3rd West Sub - RMP  
Date Samples Received: June 8, 2012  
Analysis Type: TEM, AHERA  
Turnaround: 24 Hour  
Date Samples Analyzed: June 9, 2012

Client ID Number	Lab ID Number	Area Analyzed (mm <sup>2</sup> )	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm <sup>2</sup> )
3W-060712 W	EM 885474	0.0900	869	ND	0.0049	BAS	BAS
3W-060712 N	EM 885475	0.0900	869	ND	0.0049	BAS	BAS
3W-060712 E	EM 885476	0.0900	869	ND	0.0049	BAS	BAS
3W-060712 S	EM 885477	0.0900	878	ND	0.0049	BAS	BAS

NA = Not Analyzed  
ND = None Detected  
BAS = Below Analytical Sensitivity  
Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester  
Filter Diameter = 25 mm  
Effective Filter Area = 385 sq mm

*EE*  
Digitally signed by  
Eliete E. Elmerman  
DN: cn = Eliete  
Elmerman, c = US,  
o = Reservoirs  
Environmental,  
Inc.,  
Date: 2012.06.11  
10:21:58 -0800

DATA QA



RES 237530

Due Date: 6-5-12  
Due Time: 8:30

8801 Logan St. Denver, CO 80216 • Ph: 303 884-1088 • Fax 303 477-4275 • Toll Free: 866 REI-ENV

Pager: 303-808-2088

Page 1 of 1

## INVOICE TO: (IF DIFFERENT)

## CONTACT INFORMATION:

Company: <u>REILAS Environmental</u>	Company:	Contact: <u>Dave Roskelley</u>	Contact:
Address: <u>47 W 9000 S #2</u>	Address:	Phone:	Phone:
<u>Sandy UT 84043</u>		Fax:	Fax:
		Cell/pager: <u>801 541-1035</u>	Cell/pager:
Project Number and/or P.O. #:		Final Deliverable Email Address:	
Project Description/Location: <u>3rd West Sub - RMP</u>		<u>dave@reilaso.com</u>	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		REQUESTED ANALYSIS										VALID MATRIX CODES				LAB NOTES:							
PLM / PCM / TEM <u>TEM</u> RUSH (Same Day) <u>X</u> PRIORITY (Next Day) <u>STANDARD</u> (Rush PCM = 2hr, TEM = 6hr.)		PLM - Short report, Long report, Print Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-quant, ISO-Indirect Procs	PCM - 7400A, 7400B, DSHA	DUST - Total, Respirable	METALS - Analyte(s)	RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	Salmonella: +/-	E.coli O157:H7: +/-	Listeria: +/-	Aerobic Plate Count: +/- or Quantification	E.coli: +/- or Quantification	Coliforms: +/- or Quantification	S.aureus: +/- or Quantification	Y & M: +/- or Quantification	Mold: +/-, Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES	Air = A	Bulk = B			
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm																			Dust = D	Paint = P			
Metal(s) / Dust RUSH 24 hr. 3-5 Day																			Soil = S	Wipe = W			
RCRA 8 / Metals & Welding Fume Scan / TCLP RUSH 5 day 10 day																			Swab = SW	F = Food			
Organics 24 hr. 3 day 5 Day																			Drinking Water = DW	Waste Water = WW			
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm																		O = Other					
E.coli O157:H7, Coliforms, S.aureus 24 hr. 2 Day 3-5 Day																		**ASTM E1792 approved wipe media only**					
Salmonella, Listeria, E.coli, APC, Y & M 48 Hr. 3-5 Day																		Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yyyy	Time Collected hh:mm:ap	EM Number (Laboratory Use Only)
Mold RUSH 24 Hr 48 Hr 3 Day 5 Day																		869	A		6/07/12		885474
**Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.**																		869					75
Special Instructions:																		869					76
Client sample ID number (Sample ID's must be unique)																		878					77
1 3W-060712W																							
2 3W-060712N																							
3 3W-060712E																							
4 3W-060712S																							
5																							
6																							
7																							
8																							
9																							
10																							

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: <u>[Signature]</u>	Fed Ex	Date/Time: <u>6/07/12</u>	Sample Condition: On Ice Sealed intact
Laboratory Use Only			Temp. (F°) Yes / No Yes / No <u>Yes / No</u>
Received By: <u>[Signature]</u>	Date/Time: <u>6/12/12</u>	Carrier: <u>FedEx</u>	
Results:	Contact <u>Dave</u> Phone Email Fax	Date <u>6/9</u> Time <u>11:40a</u> Initials <u>DR</u>	Contact Phone Email Fax
	Contact Phone Email Fax	Date Time Initials	Contact Phone Email Fax

[Signature] 7984 8342 3946  
7-2011\_version 1



# **Reservoirs Environmental, Inc.**

June 12, 2012

Laboratory Code: RES  
Subcontract Number: NA  
Laboratory Report: RES 237696-1  
Project # / P.O. #: None Given  
Project Description: 3rd West Sub - RMP

Eldon Romney  
R & R Environmental  
47 West 9000 South #2  
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 237696-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer  
President

# RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 237696-1  
Client: R & R Environmental  
Client Project Number / P.O.: None Given  
Client Project Description: 3rd West Sub - RMP  
Date Samples Received: June 11, 2012  
Analysis Type: TEM, AHERA  
Turnaround: 24 Hour  
Date Samples Analyzed: June 12, 2012

Client ID Number	Lab ID Number	Area Analyzed (mm <sup>2</sup> )	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm <sup>2</sup> )
3W-060812 W	EM 885831	0.1000	660	ND	0.0058	BAS	BAS
3W-060812 N	EM 885832	0.1000	664	ND	0.0058	BAS	BAS
3W-060812 E	EM 885833	0.1000	664	ND	0.0058	BAS	BAS
3W-060812 S	EM 885834	0.1000	660	ND	0.0058	BAS	BAS

NA = Not Analyzed  
ND = None Detected  
BAS = Below Analytical Sensitivity  
Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester  
Filter Diameter = 25 mm  
Effective Filter Area = 385 sq mm

Digitally signed by  
John E. Brown  
DN: cn = John  
E. Brown, o = R&R  
Environmental, ou  
= Reservoirs  
Environmental, email  
= John.E.Brown@reservoirs  
env.com, c = US,  
Date: 2012.06.12  
12:08:09 -0500

DATA QA

RES 237696

Due Date: 6-12-12  
Due Time: 5:00pm**REILAB Reservoirs Environmental, Inc.**

5001 Logan St. Denver, CO 80216 • Ph: 303 984-1886 • Fax 303-477-4275 • Toll Free 866 REIL-EMV

Pager: 303-508-2096

Page 1 of 1

## INVOICE TO: (IF DIFFERENT)

## CONTACT INFORMATION:

Company: <u>R&amp;R Environmental</u>	Company:	Contact: <u>Dave Koshelley</u>	Contact:
Address: <u>47 W 9000 S #2</u>	Address:	Phone: <u>801 541-1035</u>	Phone:
<u>Sandy, UT 84070</u>		Fax:	Fax:
		Cell/pager:	Cell/pager:
Project Number and/or P.O. #:	Final Data Deliverable Email Address:		
Project Description/Location: <u>3rd West Sub - RMP</u>	<u>dave@reenviro.com</u>		

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		REQUESTED ANALYSIS										VALID MATRIX CODES		LAB NOTES:			
PLM / PCM / TEM	<input type="checkbox"/> RUSH (Same Day) <input checked="" type="checkbox"/> PRIORITY (Next Day) <input type="checkbox"/> STANDARD (Rush PCM = 2hr, TEM = 6hr.)	PLM - Short report, Long report, Point Count TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Props PCM - 7400A, 7400B, OSHA DUST - Total, Respirable METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan ORGANICS - METH Salmonella: +/- E.coli O157:H7: +/- Listeria: +/- Aerobic Plate Count: +/- or Quantification E.coli: +/- or Quantification Coliforms: +/- or Quantification S.aureus: +/- or Quantification Y & M: +/- or Quantification Mold: +/-, Identification, Quantification SAMPLER'S INITIALS OR OTHER NOTES											Air = A	Bulk = B			
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm													Dust = D	Paint = P			
Metal(s) / Dust	<input type="checkbox"/> RUSH <input type="checkbox"/> 24 hr. <input type="checkbox"/> 3-5 Day												Soil = S	Wipe = W			
RCRA 8 / Metals & Welding	<input type="checkbox"/> RUSH <input type="checkbox"/> 5 day <input type="checkbox"/> 10 day												Swab = SW	F = Food			
Fume Scan / TCLP	<input type="checkbox"/> RUSH <input type="checkbox"/> 5 day <input type="checkbox"/> 10 day												Drinking Water = DW	Waste Water = WW			
Organics	<input type="checkbox"/> 24 hr. <input type="checkbox"/> 3 day <input type="checkbox"/> 5 Day											O = Other					
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm												**ASTM E1792 approved wipe media only**					
E.coli O157:H7, Coliforms, S.aureus	<input type="checkbox"/> 24 hr. <input type="checkbox"/> 2 Day <input type="checkbox"/> 3-5 Day											Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yyyy	Time Collected hh:mm a/p	EM Number (Laboratory Use Only)
Salmonella, Listeria, E.coli, APC, Y & M	<input type="checkbox"/> 48 Hr. <input type="checkbox"/> 3-5 Day																
Mold	<input type="checkbox"/> RUSH <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 3 Day <input type="checkbox"/> 5 Day																
**Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.**																	
Special Instructions:																	
Client sample ID number (Sample ID's must be unique)																	
1	3W-060812W											660	A		6/08/12		885 831
2	3W-060812N											664					82
3	3W-060812E											664					83
4	3W-060812S											660					84
5																	
6																	
7																	
8																	
9																	
10																	

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: <u>[Signature]</u> <u>Feb 14</u>	Date/Time: <u>6/08/12</u>	Sample Condition:	On Ice	Sealed	Intact
Laboratory Use Only		Temp. (F°)	Yes / No	Yes / No	Yes / No
Received By: <u>[Signature]</u>	Date/Time: <u>6/12/2012</u>				
Results:	Contact	Phone	Email	Fax	Date
	Contact	Phone	Email	Fax	Date

## Attachment I

### Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

A = Amosite  
An = Anthophyllite  
C = Chrysotile  
Cr = Crocidolite  
T = Tremolite

#### Structure Types

F = Fiber  
B = Bundle  
C = Cluster  
M = Matrix

ND = no structures detected  
M = other structure associated with a matrix  
NAM = Non Asbestos Mineral  
XGB = partly obscured by a grid bar

#### Sizing Conversion

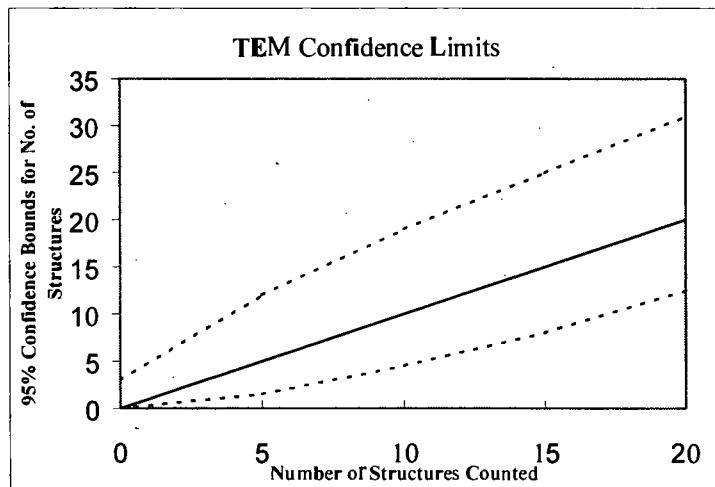
1 length unit = 5 mm on screen = 0.278 micron  
1.80 length units = 0.5 micron  
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### TEM Analysts

Jeanne S. Orr  
Nathan DelHierro  
Angela Heitger  
Jonathan Bernard

Paul D. LoScalzo  
Mark Steiner  
Norberto Zimbleman  
Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N <u>S</u>
Voltage (KV)	100 KV
Magnification	<u>20KX</u> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	660
Date received by lab	6/11/12
Lab Job Number:	237696
Lab Sample Number:	885831

Analyzed by	JB
Analysis date	6/11/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	G2-3	ND												
	F2-3	ND												
	E2-3	ND												
	C2-3	ND												
	B2-3	ND												
B	K3-6	ND												
	H3-6	ND												
	G3-6	ND												
	F3-6	ND												
	E3-6	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N(S)
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 $\mu$ m
Scale: 1D =	0.056 $\mu$ m
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client:	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	664
Date received by lab	6/11/12
Lab Job Number:	237696
Lab Sample Number:	885832

Analyzed by	JB
Analysis date	6/11/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting nites (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	L4-4	ND												
	H4-4	ND					Pmp A	80% in bucket		3-5% debris				
	H4-4	ND					Pmp B	80% in bucket		35% debris				
	G4-4	ND												
	G5-1	ND												
B	H2-4	ND												
	G2-4	ND												
	F2-4	ND												
	E2-4	ND												
	C2-4	ND												

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C = Chrysotile

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Resenroirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N(S)
Voltage (KV)	100 KV
Magnification	<del>20KX</del> 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 $\mu$ m
Scale: 1D =	0.056 $\mu$ m
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client :	R+R A
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	664
Date received by lab	6/11/12
Lab Job Number:	237696
Lab Sample Number:	885833

Analyzed by	JB
Analysis date	6/11/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	L3-1	ND												
	H3-1	ND												
	H3-1	ND												
	H4-1	ND												
	H4-1	ND												
B	L3-3	ND												
	H3-3	ND												
	H3-3	ND												
	G3-3	ND												
	F3-3	ND												

Page A+B ~ 70% on heat 3-5% debris  
 JB 6/11/12

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C = Chrysotile

NAM = Non-asbestos material



Reservoirs Environmental, Inc.  
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N(S)
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm <sup>2</sup> )	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm <sup>2</sup> )	385
Secondary Filter Area (mm <sup>2</sup> )	
QA Type	

Client:	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm <sup>2</sup> )	660
Date received by lab	6/11/12
Lab Job Number:	237696
Lab Sample Number:	885834

Analyzed by	JB
Analysis date	6/11/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AA
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

## F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	L3-1	ND												
	K3-1	ND												
	H3-1	ND												
	G3-1	ND												
	F3-1	ND												
B	E3-6	ND												
	C3-6	ND												
	B3-6	ND												
	G5-4	ND												
	F5-4	ND												

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NAM = Non-asbestos material

## Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm<sup>2</sup> (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm<sup>2</sup> (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

<b>Fiber:</b>	is a structure having a minimum length greater than or equal to 0.5 micron with an aspect ratio of 5:1 or greater with substantially parallel sides.
<b>Bundle:</b>	is a structure composed of three or more fibers in parallel arrangement, with each fiber closer than the diameter of one fiber.
<b>Cluster:</b>	is a structure with fibers in random arrangements such that all fibers are intermixed and no single fiber is isolated from the group.
<b>Matrix:</b>	is a fiber or fibers with one end free and the other end embedded or hidden by a particulate. The exposed fiber end must meet the fiber definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm<sup>2</sup> clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

### Equations Used for Calculations

$$\text{Area Analyzed, mm}^2 = \# \text{ GO counted} \times \text{Average GO Area (mm)}$$

$$\text{Concentration, s/cc} = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2\text{)}}{\text{Average GO area (mm}^2\text{)}} \times \frac{1\text{L}}{1000\text{cc}}$$

$$\text{Filter loading, s/mm}^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2\text{)}}$$

GO = TEM grid opening